

CLAIMS

1. A thermoplastic polymer powder which (i) is made mainly of an acrylic block copolymer (I) comprising at least one polymer block (A) made mainly of structural units originating from an acrylic ester; and at least one polymer block bonded thereto and selected from polymer blocks (B) made mainly of structural units originating from a methacrylic ester and polymer blocks (C) made mainly of structural units originating from an acrylic ester different from that of the polymer block(s) (A);

(ii) has a complex dynamic viscosity $\eta^*(5)$ of 5.0×10^3 Pa·s or less, the viscosity $\eta^*(5)$ being measured under conditions of a temperature of 250 °C and an angular frequency of 5 rad/sec;

(iii) has a Newtonian viscosity index n of 0.50 or less, the Newtonian viscosity index n being represented by the following equation (1):

$$n = \log \eta^*(5) - \log \eta^*(50) \quad (1)$$

wherein n represents the Newtonian viscosity index, $\eta^*(5)$ represents the complex dynamic viscosity (unit: Pa·s) measured under conditions of a temperature of 250 °C and an angular frequency of 5 rad/sec, and $\eta^*(50)$ represents the complex dynamic viscosity (unit: Pa·s) measured under conditions of a temperature of 250 °C and an angular frequency of 50 rad/sec; and

(iv) has an average particle diameter of 1 mm or

less.

2. The thermoplastic polymer powder according to claim 1, wherein the melt viscosity measured with a rotary viscometer at 250 °C and a shear rate of 0.2 sec^{-1} is 3000 Pa·s or less.

3. The thermoplastic polymer powder according to claim 1 or 2, which is obtained by an underwater cutting process or a shock pulverizing process.

4. The thermoplastic polymer powder according to any one of claims 1 to 3, wherein the weight average molecular weight of the acrylic block copolymer (I) is from 5,000 to 200,000.

5. The thermoplastic polymer powder according to any one of claims 1 to 4, wherein the weight average molecular weight of the polymer block(s) (A) constituting the acrylic block copolymer (I) is from 1,000 to 150,000, and the weight average molecular weights of the polymer block(s) (B) and the polymer block(s) (C) are from 2,000 to 50,000.

6. The thermoplastic polymer powder according to any one of claims 1 to 5, wherein the acrylic block copolymer (I) is a triblock copolymer made of the polymer block (B)-the polymer block (A)-the polymer block (B).

7. The thermoplastic polymer powder according to any one of claims 1 to 6, wherein the difference between the solubility parameter $\sigma(A)$ (unit: $\text{MPa}^{1/2}$) of the starting monomer(s) constituting the polymer block(s)

(A) and the solubility parameter $\sigma(B)$ or $\sigma(C)$ (unit: $\text{MPa}^{1/2}$) of the starting monomer(s) constituting the polymer block(s) (B) or the polymer block(s) (C) is 2.5 or less.

8. The thermoplastic polymer powder according to any one of claims 1 to 7, which is for slush molding or rotational molding.

9. A process for producing a molded product by performing slush molding or rotational molding by use of the thermoplastic polymer powder according to any one of claims 1 to 8.

10. A molded product produced by use of the thermoplastic polymer powder according to any one of claims 1 to 8.

11. The molded product according to claim 10, which is a toy member having a JIS-A hardness of 40 to 95.

12. The molded product according to claim 10, which is a lighting cover having a JIS-A hardness of 95 or more.